Rev. "B" 8/28/2007 YG

Operating Manual

CREST ULTRASONIC POWERSONIC tm CP200, CP230, CP360, CP500, CP1100, CP1200, CP2600

(Model CP200D NOT AVAILABLE)

Ultrasonic Tabletop Cleaner

Model T / HT / D

Introduction

Dear Customer,

Thank you for purchasing Crest Ultrasonic's Powersonic™ Tabletop cleaner.

The product you have purchased is one of the most innovative ultrasonic products and provides optimum cleaning performance with comfort of use.

This document was compiled in order to make all information concerning the installation, handling and operation of the ultrasonic system available to end users.

In order to ensure reliable operation, please take note of all the information and instructions in these operating instructions without fail.

We reserve the right to make any technical changes and improvements at any time.

Any enclosed documents of other vendors serves only for information.
We assume no liability whatsoever for its completeness or accuracy.

If you should require information extending beyond this documentation, we will be pleased to offer you the technical advice at any time.

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1.0 EXPLANATION OF SYMBOLS

WARNINGS REGARDING RISK OF PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT.

1. SAFETY INFORMATION

Please read the following safety information before the operation of the ultrasonic cleaner.

- The applications of the ultrasonic cleaner are described in this document and they must be complied with.
- Insufficient knowledge in handling or operating the cleaner can cause irreparable damage and injuries. As a result, the cleaner may only be operated by trained personnel.
- The ultrasonic cleaner may only be connected to the supply voltage specified on the sticker at the rear of the unit. Use the proper power cord designated for the power consumption of the unit.
- The power cord of the unit is being used as the disconnect device.
- Please position the equipment in a manner that is accessible for the power cord disconnection.
- Always use the correct power cord for available socket outlet.
- Use cleaning fluids which are approved for use with ultrasonic applications.
- Flammable or explosive fluids may not be used. Fluids which contain halogens (chlorine, bromine or iodine ions) can cause irreparable damage.
- Never switch ON the ultrasonic cleaning device without cleaning fluid. The cleaning tank must be filled with fluid to at least 7/8 full (approximately 1” – 1 ¼” from top) up to the groove.
  Also ensure that the fluid level is high enough during operation.
- The temperature can rise and develops a large amount of steam as a result of heating or the energy from ultrasonic effect. Hence ensure that there is adequate ventilation at the installation site.

Safety Information

- Fluid should not get inside the cleaner. Wipe off any fluid which has overflowed and is running down the side walls as soon as possible.
- The parts to be cleaned may not be laid or placed directly at the bottom of the tank. Please use a basket to contain the parts.
- Never leave the ultrasonic cleaner unattended during operation.
- If the cleaner does not have to be ready for immediate operation, disconnect it from the power supply system (unplug).
- Never start up the cleaner if it has been damaged. Inspect the cleaner and its power cord for external damage at regular intervals. Repairs may only be carried out by the manufacturer.
- Observe the statutory regulations when disposing of the cleaning fluid.

DANGER:

Always ensure that a power cord with a protective earth conductor (PE) is used.

Never use power cord without a protective earth conductor.
- DANGER TO LIFE AND LIMB !

CAUTION:

- Ultrasonic energy!
  Never put your hands in the tank when the ultrasonic is on. Always switch off the ultrasonic when inserting or removing the parts to be cleaned!
- Hot fluid!
- Toxic fumes!

2. GENERAL

Intended purpose

The Crest Powersonic ultrasonic cleaners were specially developed for small-scale cleaning, blending or degassing.

Cleaning fluid

The cleaning fluid used depends on the material of the parts to be cleaned and the type of soiling. Please contact the manufacturer for advice about the cleaning agent.

3. START- UP

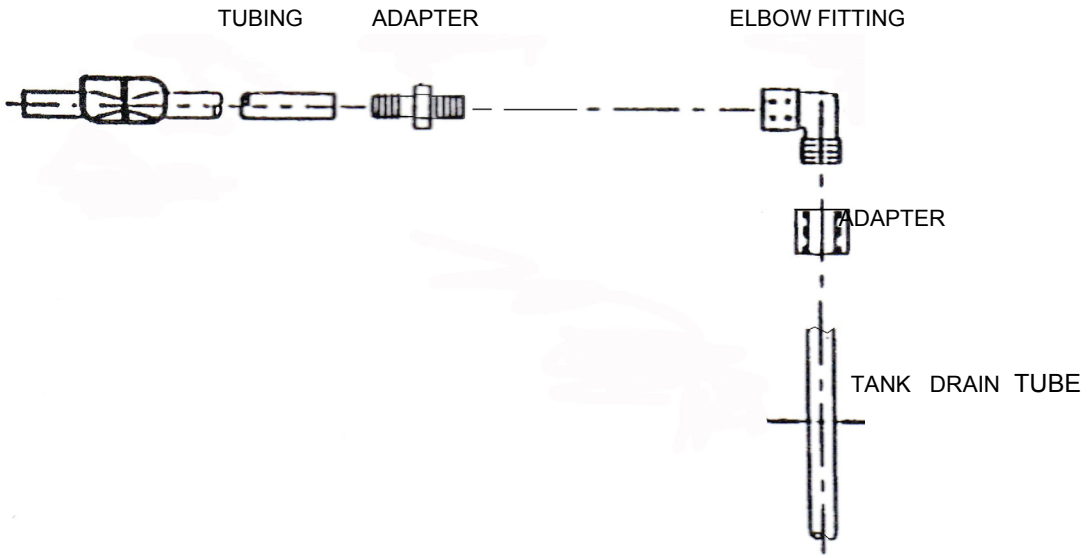
- Check that the main connection, which must be equipped with a protective earth conductor, conforms with the data on the rating plate of your cleaner.
- Set up the ultrasonic cleaner on a firm, dry and level base.
- Connect drain assembly (see illustration)
- Fill the cleaning tank with water and add a suitable cleaning agent, depending on the cleaning application.
  The liquid level should be approximately 1” – 1 ¼” from the top.
- Please take note of the respective safety regulations for handling chemicals.
- Connect the ultrasonic cleaner to the main connection and switch on the power switch located at the side.
  When the cleaner has been switched on, the green indicator light in the switch is lit. The cleaner is now ready for operation.

  Ensure without fail that you use the correct power cord for the socket outlet.

3. START-UP

Drain Assembly (see drawing bellow)

1. Open bag and remove drain assembly
2. Loosen nut several turns. DO NOT REMOVE.
3. Push assembly over drain tube until it stops.
4. Hand tighten. DO NOT OVER TIGHTEN. If further tightening is needed, an adjustable or 15/16 open-end wrench is recommended.
5. Secure tubing control valve on plastic tubing (squeeze closed) before filling machine.



4. OPERATION

4.1 Ultrasonic cleaner Model 'T' and 'HT'

These models have a mechanical time switch which allows a variable operating time of the sonic from 1 to 30 minutes or continuous operation. The continuous sonic function is obtained by turning the knob counter-clockwise from the '0' position to the latching point. For time below 2 minutes, first of all set the time switch to a longer time and then turn it back to the desired operating time. This is inherent in the design.
A green LED is lit during the sonic operation. The sonic energy applied to the fluid is visible in the form of cavitations on the surface of the fluid.

In the 'HT' series, a bath heater is connected to support the cleaning task. The bath's temperature is adjustable up to 80°C (176°F). When the heater is on, a yellow LED is lit. The LED turns off once the bath preset temperature is reached.

Ultrasonic cleaner Model 'D'

The cleaner has a digital interface panel which enables settings and its operation.

The following settings are possible:

- Sonic turn-on duration from 1 to 99 minutes in steps of 1 minute or continuous operation,
- Bath temperature in steps of 1°C (33°F) to 80°C (176°F).
- Sonic power in nine steps from approx. 40% to 100 % of max. output power

In addition, the cleaner can be operated in DEGAS mode for degassing of the cleaning fluid. Although the cleaning fluid is also degassed in normal operation, this can considerably speed up in the DEGAS mode, with that the following cleaning operation is considered to be more effective and uniform.

During the DEGAS mode, the sonic is switched ON and OFF in short intervals.
This causes the entrapped air to form into larger bubbles during the acoustic cavitation of the fluid. The bubbles can then rise freely to the surface in pauses between the acoustic cavitations.

Operating and display elements of the 'D' model

'Ultraschall / Sonic / Ultrasons' button
The sonic is switched ON and OFF by means of this button. The operating status 'Sonic On' is indicated by the illumination of the red light-emitting-diode (LED) on this button.

'Heizung / Heater / Chauffage' button
The heating is switched ON and OFF by means of this button. The operating status 'Heating ON' is indicated by the illumination of the red LED on this button.

'Degas / Digazage' button
The DEGAS mode is switched ON and OFF by means of this button (see description below). The operating status is indicated by the illumination of the red LED on this button.

'Zeit / Time / Durée' display (two digits)
When the sonic is **switched OFF**, the preset cleaning time is shown in minutes in this display. When the ultrasound is switched **ON**, the remaining cleaning time is shown and the dot in the display blinks to indicate the preset cleaning time is running.

'Temperatur / Temperature / Tempèrature' display (two digit)
In cleaning mode, the current bath temperature is shown in °C in this display. If the preset temperature has not been reached, the decimal point in the display blinks; the bath is being heated. Once the preset temperature has been reached, the decimal point will stay lit all the time. During the process of 'Setting the bath temperature', the target temperature for the cleaning bath is shown in the display.

Maintenance

'Leistung / Power / Puissance' display (single digit)
The operating sonic power is shown in steps of 1 to 9 in this display. Step 9 corresponds to maximum power (100%) and step 1 corresponds to 40% of maximum power (approx.)

Auswahl /Select / Choix button
The following operating parameters can be called and set by means of this button:

Setting the cleaning time
With the sonic off, press the 'Select' button. The 'Time' display blinks. The desired cleaning time can be set in steps of 1 to 99 minutes by means of the '+' and '–' buttons.

Once the desired time has been set, stop pressing the '+' and '–' buttons and wait until the display stop blinking (approx. 3 sec). The value has now been stored.

The timer function can be rendered inoperative by pressing the '-' button until two horizontal lines are shown in the display. With this continuous operation mode is active.

Setting the bath temperature
With the sonic off, press the 'Select' button until the 'Temperature' display blinks.
The desired bath temperature can be set in °C (max. 80°C (176°F)
by means of the '+' and '–' buttons.

Once the desired temperature has been set, stop pressing the '+' and '–' buttons and wait until the display stops blinking (approx. 3 sec). The value has now been stored.

Setting the sonic power
The output sonic power can be varied/set during the sonic switched ON or OFF condition.

Ultrasound 'OFF':
With the sonic switched off, press the 'Select' button until the 'Power' display blinks. The desired power can be set in steps of 1 – 9 using the '+' and '–' buttons
(max. power = step 9).

Once the desired power has been set, stop pressing the '+' and '–' buttons and wait until the display stop blinking (approx. 3 sec). The value has now been stored.

Ultrasound 'ON':
With the sonic switched on, press the 'Select' button until the 'Power' display blinks. The desired power can be set in steps of 1 – 9 by means of the '+' and '–' buttons (max. power = step 9).

Once the desired power has been set, stop pressing the '+' and '–' buttons and wait until the display stop blinking (approx. 3 sec). The value has now been stored.

Degassing the fluid (DEGAS)
In order to obtain an optimum cleaning action after the cleaner has been drained and refilled, the fluid must first of all be degassed, since the cleaning action is impaired by the bound gas bubbles (usually ambient air). Ultrasonic cavitations remove these gases.

The cleaner is periodically switched ON and OFF during the DEGAS mode. The gas bubbles rise up in the fluid during the sonic OFF period.
Degassing can be sped up by adding a few drops of surfactant (e.g. liquid detergent) to the cleaning fluid.
Most ultrasonic cleaning agents already contain a surfactant. The degassing process does not have to be repeated when reusing the same cleaning fluid.

Heating the cleaning bath
If a specific bath temperature is required for the cleaning operation, the cleaning bath can be heated up to a preset temperature (See the process 'Setting the bath temperature'). Normally the cleaning process is considerably more effective if the cleaning fluid is heated.

Important: Set the bath temperature to conform to the parts to be cleaned!

Maintenance

Ultrasonic cleaning

- Immerse the parts to be cleaned into the bath, whereby the distance of the parts to be cleaned from the floor of the tank must be approximately 13mm (1/2”). If necessary, use the cleaning basket which is available as an accessory part.

- Set the required cleaning time and temperature for the cleaning process and, in the case of the D models, the ultrasonic output power as well.

  The parameters 'Cleaning time' and 'Sonic power' depend on a great extent on the cleaning fluid, temperature, type of soiling as well as on the degree of soiling of the parts to be cleaned.
  The time can vary from a few seconds to a few minutes.

  An optimum combination of the parameters may have to be determined through experiments.

- Now start the cleaning operation by switching on the sonic.

- After cleaning, remove the parts from the bath with care. We recommend rinsing the parts in clean water.

- Disconnect the cleaner from the main power when it is not in use.

Important:

- Please note that the bath temperature rises considerably with lengthy ultrasonic operation. If the bath temperature reaches approx. 90°C (194°F), the heater and the ultrasonic are switched off for safety reasons. In the case of the 'D' model, the error message 'Unit too hot' (running text) appears in the display.

- Never lay the parts to be cleaned directly on the floor of the tank.
  Never clean too many parts at once, the cleaning may deteriorate.

Emptying the tank

When the sonic cavitation in the bath becomes noticeably weaker or the fluid is very dirty, the cleaning bath should be changed.

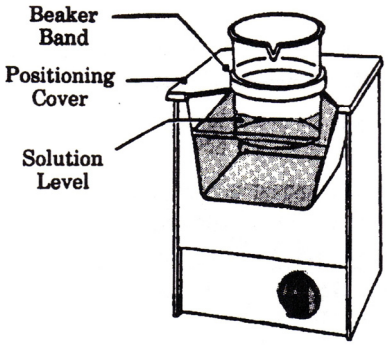
Some models are equipped with drain-pipe assembly at the rear of the cleaner for this purpose.

Accessories

- Stainless steel tank cover
  To prevent evaporation of the bath fluid and odour.

- Stainless steel cleaning basket
  For containing of the parts to be cleaned. The basket can be suspended in the cleaning bath. All 3/4 gallon baskets and larger are engineered to be set on top of the tank for drainage.

Proper Procedure for Using Auxiliary Pans and Beakers



When a beaker is used, place in a beaker positioning cover using a beaker 0-ring to adjust the suspension so beaker bottom is just below the surface of the solution level in the main tank but off the tank bottom.

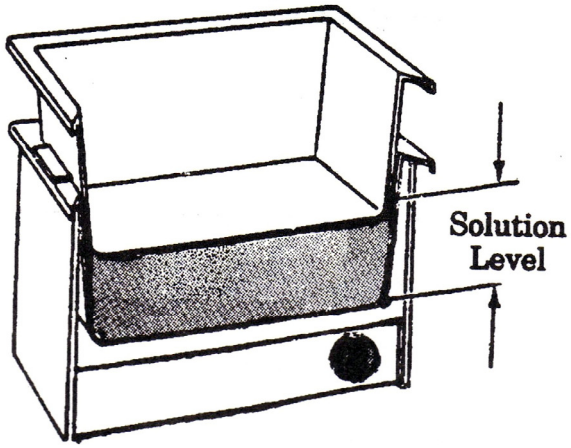
Cavitation will be transmitted from the main tank to the auxiliary pan or beaker. More than one beaker can be used at a time depending on the model.

- Beaker positioning cover with hole or holes (various sizes)
  - easy cleaning of small and delicate parts.
  - lower consumption of cleaning fluid.
  - cleaning using various cleaning agents.
  The sonic is coupled to the filled beaker via tank water as the medium.
  Fill the cleaning tank with water and add a surfactant (e.g. liquid detergent).

Maintenance

Accessories

Auxiliary Pan



Fill stainless steel tank to fill line with proper ultrasonic cleaning solution and clean normally. Fill auxiliary pan or beaker with another designated ultrasonic solution to a level just above item to be cleaned or rinsed. The auxiliary pan or beaker will now function as another ultrasonic cleaning machine when used properly. Place auxiliary pan into main tank, resting it on its handles, making sure that the bottom of the auxiliary pan is below solution level. Several combinations may be utilized.
It is recommended that additional covers be placed on the auxiliary pans to reduce evaporation loss and fumes.

- Auxiliary pan
    - secondary cleaning, rinsing or degassing. The sonic is coupled to the filled auxiliary pan via tank water as a medium.
      Fill the cleaning tank with water to the proper operating level and add a surfactant (e.g. liquid detergent).

5. MAINTENANCE

The ultrasonic cleaner is maintenance-free. Nevertheless, you should take note of the followings :

- Keep the ultrasonic unit clean. Occasionally wipe the housing with a damp cloth. Remove any cleaning agent residues immediately.

- Ensure that the cleaning fluid does not soil the housing during cleaning. Clean or change the cleaning fluid as required.
-
- Avoid scratching the floor of the tank. This leads to accelerated cavitation pitting (erosion). As a result, please ensure that the parts to be cleaned have no direct contact with the floor of the tank . For best results keep tank as clean as possible only allowing small amounts of dirt to accumulate on the floor of the cleaning tank. If necessary, the cleaning fluid should be drained so that the floor of the tank can be cleaned.

- Check the cleaner and the power cord for damage at regular intervals as well as before use. A visibly damaged cleaner must not be used and must be disconnected from the power supply source.
  Do not perform repairs yourself. Send the cleaner to the manufacturer for servicing.

6. ANNEX

6.1 Technical data

Use the cleaner for small scale cleaning tasks.

Executions

Device type	Execution
Crest Powersonic Series 'T'	Table-top cleaner with mechanical timer
Crest Powersonic Series 'HT'	Table-top cleaner with mechanical timer and thermostatically controlled heater
Crest Powersonic Series 'D'	Table-top cleaner with digital control and display

Output Ultrasound with a frequency of approx. 45 kHz
Switch-on duration: 100% (continuous operation)

Mains connection AC 115V or 230V ± 10%, 47 ... 63Hz, 1~, N, PE / 16A

Model	Peak/ average Power	Heating Power	Connected load 'T'-Model	Connected load 'HT' & 'D'-Model
CP 200	110W/55W	90W	95VA	180 VA
CP 230	160W / 80W	160W	140VA	300VA
CP 360	200W / 100W	160W	170VA	320VA
CP 500	240W / 120W	160W	200VA	350VA
CP 1100	360W / 180W	600W	280VA	880VA
CP 1200	400W/200W	600W	310VA	910VA
CP 2600	600W / 300W	1100W	450VA	1550VA

Ambient conditions

Permissible ambient temperature: 0°C ... +40°C (32F ... 104F)
Permissible storage temperature: - 20°C ... +85°C (- 4F ... 185F)

Atmospheric humidity: max. 70%, non-condensing

Protection to IEC 529 / IP: IP 23

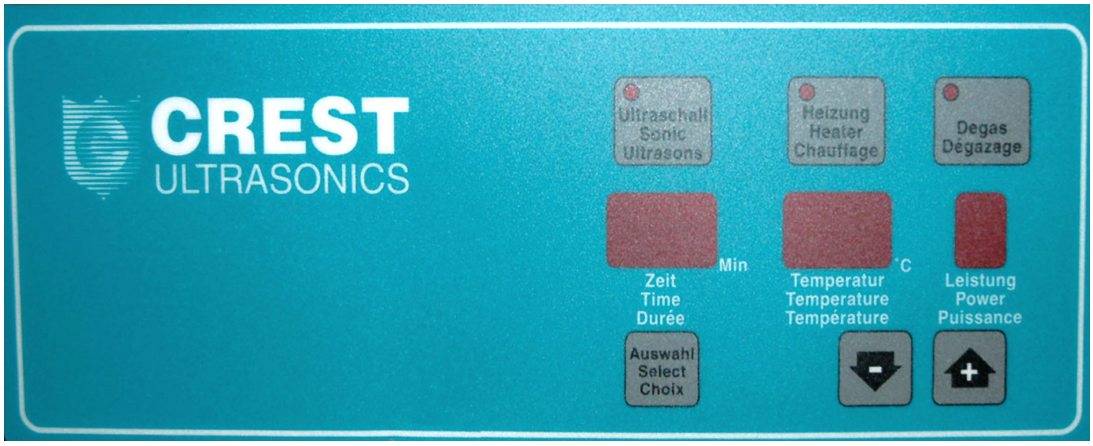
Annex

Operating Panels

Model " T "

Model " HT "

Model " D"



Connections

Main connection, single-phase	Plug connection in accordance with EN 60320 (inlet connector for non-heating appliances) Power cord, cable length approx. 2.0m (6 ft)

Dimensions and weights

Model	Tank capacity gal/liters)	Inside dimensions of the tank (inches/mm)	Outside dimensions of unit (inches/mm)	Weight (lbs/kg)
CP 200	½ gal 1.75	6 x 5 ¼ x 4 148 x 134 x 100	7 x 6 ½ x 10 ½ 175 x 164 x 270	6 lbs 2.7
CP 230	¾ gal 2.8	9 ½ x 5 ¼ x 4 237 x134 x100	11 ½ x 6 3/8 x 9 1/4 265 x 162 x 235	9 lbs 4.1
CP 360	1 gal 3.8	9 ½ x 5 ¼ x 6 237x134x150	11 ½ x 6 3/8 x 11 5/8 265 x 162 x 295	10.8 lbs 4.9
CP 500	1 ½ gal 5.4	11 ¾ x 6 x 6 297 x 148 x 150	12 ¾ x 7 x 11 5/8 325 x 176 x 295	12.8 lbs 5.8
CP 1100	3 ¼ gal 12.3	11 ¾ x 9 ½ x 8 297 x 237 x 200	12 ¾ x 10 ½ x 13 325 x 265 x 335	22 lbs 10.0
CP 1200	2 ½ gal 9.2	19 ½ x 5 ¼ x 6 495 x 134 x 150	20 ¼ x 6 x 10 5/8 515 x 150 x 270	21 lbs 9.5
CP 2600	7 gal 26.1	19 ½ x 11 ¾ x 8 495 x 297 x 200	21 x 12 ¾ x 14 ½ 530 x 325 x 365	38 lbs 17.3

Annex

6.3 Resistance of the front overlay to solvents

The front overlay is made of polyester foil with biaxial alignment. As a result, it has high resistance to solvents. It is tougher and more durable than other foils generally used for plastic foil keyboards and front panels, such as e.g. polycarbonate and PVC.

In accordance with DIN 42 115 part 2, the material is resistant to the following chemicals over a period of more than 24 hours without any perceptible changes:

Ethanol Cyclohexanol Diacetone alcohol Glycol Isopropanol Glycerine Methanol Triacetine Dowandol DRM/PM	Formaldehyde 37 – 42 % Acetaldehyde Aliphatics Toluene Xylene Thinning agent (white spirit)	1.1.1.-trichlorethylene Ethyl acetate Diethyl ether N-butyl acetate Amyl acetate Butylcellosolve Ether
Acetone 2-butanone Dioxan Cyclohexane MIBK Isophorone	Formic acid < 50 % Acetic acid < 50 % Phosphoric acid < 30 % Hydrochloric acid < 36 % Nitric acid < 10 % Trichloroacetic acid < 50 % Sulphuric acid < 10 %	Sodachlorine < 20 % Hydrogen peroxide < 25 % Potash soft soap Detergents Tensides Softening agents Iron (II) chloride (FeCl2) Iron (III) chloride (FeCl3) Dibutyl phthalate Dioctyl phthalate Sodium carbonate
Ammonia < 40 % Sodium hydroxide solution < 40 % Potassium hydroxide Alkali carbonate Dichromates Potassium hexacyanoferrate Acetonitrile Sodium bisulphate	Cutting emulsions Diesel oil Varnish Paraffin oil Castor oil Silicone oil Turpentine substitute Brake fluid Decon Aviation fuel Petrol Water Brine	Sodachlorine < 20 % Hydrogen peroxide < 25 % Potash soft soap Detergents Tensides Softening agents Iron (II) chloride (FeCl2) Iron (III) chloride (FeCl3) Dibutyl phthalate Dioctyl phthalate Sodium carbonate

6.4 Error messages of the 'D' series

The 'D' model cleaner has an error detection system which displays the following error messages under different circumstances. The error message appears in the form of running text which runs through the display:

- **Sonic Error**
  In this case, an error has been detected in the ultrasonic generator or the generator control system.
  Switch the ultrasonic cleaner off and on again by means of the power switch. Start the cleaning operation once again. If the error message re-occurs, the device must be sent to the manufacturer for servicing.

- **Unit Too Hot Src - H**
  In this case, the thermal protection device has switched off the heater and the sonic.
  Please check that there is enough fluid in the cleaning tank (7/8 of the filling level). Wait a few minutes before restarting the cleaning operation.

- **Unit Too Hot Src – F**
  In this case, the dry-running cut-out protection for the heater has been activated. The heater and the ultrasonic are automatically switched off.
  Please check that there is enough fluid in the cleaning tank (7/8 of the filling level). Wait a few minutes before restarting the cleaning operation.

- **Unit Too Hot Src – b**
  In this case, the maximum permissible bath temperature of 90°C (194°F) has been exceeded. The heater and the ultrasonic are automatically switched off.
  Wait a few minutes before restarting the cleaning operation.

Notes

© GOES 746

LIMITED LIFETIME WARRANTY

Crest Ultrasonics Corporation warrants the Crest POWERSONIC ™ ultrasonic cleaners for a period of two years from the date of purchase when used in accordance with the manufacturer's instructions. Please review the operating manual carefully. In addition, the tank heaters carry a lifetime original owner warranty. During the warranty period, Crest Ultrasonics Corporation will repair or replace free of charge all parts that are defective because of material or workmanship.

Warranty does not include damage or product failure which results from cavitation erosion, misuse, abuse or transportation damage.

If the unit fails to operate or if you have a question regarding its operation, please contact customer service at:

Crest Ultrasonics Corporation 800-273-7822
or
Crest Ultrasonics Corporation Repair Center 800-867-5560
954-748-2278

LITHO IN U.S.A.